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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,947	06/16/2005	Andrew J Boulton	8830-345US1 (211440)	8296
23973	7590	11/29/2006	EXAMINER	
DRINKER BIDDLE & REATH ATTN: INTELLECTUAL PROPERTY GROUP ONE LOGAN SQUARE 18TH AND CHERRY STREETS PHILADELPHIA, PA 19103-6996			LEUNG, KA CHUN ALAN	
			ART UNIT	PAPER NUMBER
			3747	
DATE MAILED: 11/29/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/539,947

Applicant(s)

BOULTON, ANDREW J

Examiner

Ka Chun Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 14-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 06162005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I drawn to a rotatable mounted shaft member mounted between the inlet and outlet passages to allow communication with a cylinder in the reply filed on 03 NOV 2006 is acknowledged. The traversal is on the ground(s) that the restriction is improper and not permissible based on PCT rules, and further that Article 27(1) PCT forbids deviating from a unity determination in the International Phase. This is not found persuasive because Article 27(1) only prohibits compliance with national law requirements relating to the form or contention of the international application different from or additional to those which are set forth by the Patent Cooperation Treaty. While it is true that U.S. restriction practices in accordance with 37 CFR 1.141-1.146 may not be applied in national stage applications submitted under 35 U.S.C. 371, the requirement for unity of invention under PCT Rule 1.31 is still applicable. National stage applications are still subject to unity of invention practices in accordance with 37 CFR 1.475 and 1.499.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 14-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention (Group II), there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 03 NOV 2006.

***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

4. The information disclosure statement filed 16 JUNE 2005 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

***Drawings***

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "means for individually controlling or adjusting the speed of rotation of said shaft members" of Claims 3, 4, 10, and 11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

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number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Rotary valve for Internal Combustion Engines.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 3, 4, 10, and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject

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matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The "means for independently controlling or adjusting the speed of rotation of said shaft members," on Page 3, Line 27 and Page 4, Line 1, and "means for varying the speed of rotation of tubes 310, 312," on Page 20 Lines 12 and 17, do not sufficiently set forth the structure or apparatus necessary for controlling or adjusting the speed of rotation of the shaft members.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 3, 4, 10, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Regarding claims 3, 4, 10, and 11 there is insufficient structure set forth to carry out the "means for independently controlling or adjusting the speed of rotation of said shaft members." While the limitation is recited in the specification as noted in Paragraph 8 above, no additional structure or details are provided.

### ***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 5, 6, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by MUROKI (US Patent 5,154,147). MUROKI distinctly discloses a rotary valve (1) slidably rotatably mounted in an engine cylinder head (3) with an indentation (2) to allow communication with intake of combustion gases through intake (4) to the combustion chamber (6), and exhaust of combustion gases from the combustion chamber (6) through exhaust (5). The rotary valve (1) is a solid round cylinder as noted in Column 4, Line 47. Additionally, radial seals (7a-7d) are provided for gas sealing depending on the rotational position of the rotary valve (1).

14. Claims 1-3, 7, 12, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by GRIMWOOD (WO 00/71858). GRIMWOOD discloses a rotary valve system comprising of an internal combustion engine (100) with a cylinder head (104) and shaft members (8) spanning the spread of cylinders it services. Each elongated shaft member (8) are part of a valve rotor shaft (2A, 2B). Each valve rotor shaft (2A, 2B) are rotated to provide communication between the combustion chambers (101) with either the inlet or exhaust ports (105, 106). Additionally a seal assembly 3 is provided to prevent the escape of high pressure combustion gases, as well as entry of unwanted lubricant. GRIMWOOD further discloses a rotor rotational velocity controlling means to control and vary the rotational velocity of the rotor.

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over GRIMWOOD (WO 00/71858) in view of DAHLBORG (US Patent 6,443,116).

18. GRIMWOOD discloses a rotary valve system comprising a cylinder head (104) with valve rotor shafts (2A, 2B) that comprises an elongated shaft member (8) that spans the spread of all the cylinders it services, as depicted in Fig 3. Each valve rotor shaft (2A, 2B) are rotated to provide communication between the combustion chambers (101) with either the inlet or exhaust ports (105, 106). Additionally a seal assembly 3 is provided to prevent the escape of high pressure combustion gases, as well as entry of unwanted lubricant. Furthermore, a rotor rotational velocity controlling means to control and vary the rotational velocity of the rotor. However, GRIMWOOD does not disclose the shaft members being driven independently of the crankshaft.

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19. DAHLBORG discloses a rotary motor (16) for driving a valve device which includes rotatable valve body (13) used in an internal combustion engine. As noted in Column 2, Line 2, "a separate rotary motor may be driven independently of the rotation of the crank shaft, which permits the valve body to be discontinuously rotated."

20. Thus it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have provided the rotary valve system of GRIMWOOD with a rotary motor, in light of the teachings of DAHLBORG, in order to provide an independently driven rotary valve body to enable more instantaneous opening and closing of a suction and/or exhaust channel of a combustion engine.

21. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over GRIMWOOD (WO 00/71858) in view of LUYCKX (GB 284941).

22. As stated above in Paragraph 18 above, GRIMWOOD discloses a rotary valve system comprising a cylinder head (104) with valve rotor shafts (2A, 2B) that comprises an elongated shaft member (8) that spans the spread of all the cylinders it services, as depicted in Fig 3. Each valve rotor shaft (2A, 2B) are rotated to provide communication between the combustion chambers (101) with either the inlet or exhaust ports (105, 106). Additionally a seal assembly 3 is provided to prevent the escape of high pressure combustion gases, as well as entry of unwanted lubricant. Furthermore, a rotor rotational velocity controlling means to control and vary the rotational velocity of the rotor. However, GRIMWOOD does not disclose the use of a hollow inner tube member, which is rotatably mounted within the valve rotor shafts.

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23. LUYCKX discloses a rotary valve cylinder (I) with a movable central body (i). The invention further discloses a means of suitable control so that it can be operated from a distance by the driver or by a regulator dependent upon engine speed in order to control the angular displacement of the central body (i). By adjusting the central body (i) with respect to the rotary valve cylinder (I) an advance in closure or delay in opening can be obtained as described on Page 1, Lines 55-65 of the specification.

24. Thus it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have provided the rotary valve system of GRIMWOOD with a rotary valve central body, in light of the teachings of LUYCKX, in order to allow advance closure or delayed opening in the rotary valve.

### ***Conclusion***

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is listed in the attached PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ka Chun Leung whose telephone number is (571) 272-9963. The examiner can normally be reached on 7:30AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Cronin can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCL  
17 NOV 2006

  
STEPHEN K. CRONIN  
SUPERVISORY PATENT EXAMINER